REMARKS

Claims 1-27 have been examined, with all claims rejected under 35 U.S.C. § 103(a). Applicants respectfully traverse these rejections. Accordingly, the original claims have not been amended, but are provided above for the convenience of the Examiner. Reconsideration of the present application is respectfully requested in view of the below remarks.

Invention Overview:

The current invention is directed to a sensor arrangement designed to operate with improved spatial resolution and improved temporal resolution. Referring to Figure 2 of the published application, the sensor arrangement 200 includes a plurality of sensor arrays 203 arranged in crossover regions of row lines (201a, 201b or 201c) and column lines (202a, 202b or 202c). Each sensor array 203 includes at least one coupling device 204 to electrically couple a respective row line (201a, 201b or 201c) to a respective column line (202a, 202b or 202c). Each sensor array 203 further employs a sensor element 205 assigned to each coupling device 204 which influences the current flow through the coupling device 204. (See paragraph 0080 of the published application.)

Moreover, the sensor arrangement 200 includes a detector 206 designed to detect accumulative current flows provided by the sensor arrays 203 of the respective lines, as well as a decoding device 207 configured to evaluate the accumulative current flows. (See paragraph 0080 of the published application.) Specifically, the decoding device 207 evaluates the correlation of the accumulative current of a respective row line with a respective column line to determine which sensor arrays 203a are active (i.e., which sensor elements 205 of their respective sensor arrays 203 are detecting a sensor signal). (See paragraph 0082 of the published application.)

Claim Rejections – 35 U.S.C. § 103

The Office Action issued the following prior art rejections:

(1) Claims 1-11, 13-15, 19 and 23-27 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroda et al. (U.S. Patent No. 6,512,543) in view of Hurst et al. (U.S. Patent No. 6,646,912), Aufrichtig et al. (U.S. Patent Appl. Pub. No. 2003/0058998) and Hashimoto et al. (U.S. Patent Appl. Pub. No. 2002/0039743);

(2) Claim 12 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroda in view of Hurst, Aufrichtig, Hashimoto and Murakawa et al. (U.S. Patent No. 6,667,632);

(3) Claims 16-18 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroda in view of Hurst, Aufrichtig, Hashimoto and Bailey et al. (U.S. Patent No. 3,668,543);

(4) Claims 20-21 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroda in view of Hurst, Aufrichtig, Hashimoto and Tsukada et al. (U.S. Patent No. 5,250,168); and

(5) Claim 22 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroda in view of Hurst, Aufrichtig, Hashimoto and Reimer (U.S. Patent No. 6,593,588).

Claim 1 is independent and claims 2-27 are all dependent on claim 1. Applicants respectfully traverse these rejections as follows:

Independent claim 1:

Independent claim 1 recites "A sensor arrangement comprising: ... a detector electrically coupled to a respective end section of at least a portion of the row lines and of at least a portion of the column lines, the detector detecting a respective accumulative current flow from the individual electrical current flows provided by the sensor arrays of the respective lines."

Aufrichtig is directed to an X-ray system that consists of a detector 22 that is comprised of a photo detector array 26 and a scintillator 24. As shown in Figure 2, the photo detector array is formed by a matrix of detector elements 40, each of which is comprised of a photo diode 42 and a thin film transistor 44. (See Aufrichtig paragraphs 0016 & 0018.) In order to acquire an X-ray image, a detector controller 27 applies a positive voltage to all row select lines 46^{-1} through 46^{-n}, which effectively turns on the transistors 44 causing the photo diodes 42 to charge. (See Aufrichtig paragraph 0020.) When a pulse of X-ray photons strike the photo diodes 42, the diodes conduct electricity and discharge a portion of their charge. (See Aufrichtig paragraph 0021.)

The Office Action asserts on page 3 that "Aufrichtig et al describes ... wherein a detector 27, is coupled to the rows and lines in order to apply a bias voltage to the rows and columns respectively." Element 27, however, is a detector controller that applies a positive voltage to the rows and columns of the photo detector array 26 (a component of detector 22). Detector controller 27 charges the photo diodes 42 of photo detector array 26 to receive a strike of X-ray photons; it does not detect an accumulative current flow provided by the photo detector array 26.

Moreover, following the X-ray exposure, the residual charge of each photo diode 42 is measured. Specifically, the column signal lines 48^{-1} through 48^{-m} for each detector array column are simultaneously connected to separate sensing circuits in the image processor 28. (See Aufrichtig paragraph 0022.) Aufrichtig does not teach or suggest a detector coupled to both row lines and column lines configured to detect an accumulative current flow from the individual current flows provided by the sensor arrays of the respective lines.

Claim 1 additionally recites "A sensor arrangement comprising: ... a decoding device coupled to the row lines and the column lines, the decoding device evaluating at least a portion of

the accumulative electric current flows fed to the decoding device via the row lines and the column lines to determine at which of the sensor elements a sensor signal is present."

Hashimoto is directed to a nucleic acid detection sensor that includes fixed electrodes 1901 designed to electrochemically detect nucleic acid. The sensor includes switching elements 1902 that are connected to a scanning line 1904 and are turned on and off by the signal being output by a timing pulse generator 1909. (See Hashimoto Fig. 18.) Moreover, although not referenced by the Office Action, Hashimoto discloses a signal detection circuit (See Fig. 1, element 109; not shown in Fig. 18) provided to detect electrochemical changes through the signal line 105 (also shown as Fig. 18, element 1903). (See Hashimoto paragraphs 0124-0126, 0046.)

The Office Action further states on page 4 that "Hashimoto et al describes a detection sensor having a matrix formation (See figure 1) wherein a decoder, 1907 is provided in order to control the on-off on the signal lines." While the Office Action is correct in this regard, Hashimoto is merely disclosing that the decoder 1907 controls the function of the switching elements 1902, allowing the fixed electrodes 1901 to become active in sequence. (See Hashimoto paragraph 0127.) The decoder 1907 is not coupled to the row and column lines and does not evaluate accumulative electric current flows fed to the decoding device via the row lines and the column lines to determine at which of the sensor elements a sensor signal is present.

Furthermore, Kuroda and Hurst fail to make up for Aufrichtig's and Hashimoto's deficiencies. Accordingly, independent claim 1, along with its dependent claims, is patentable over Aufrichtig and Hashimoto for at least these reasons.

Dependent claims 12, 16-18 and 20-22:

Regarding dependent claims 12, 16-18 and 20-22, the applied references fails to make up for Aufrichtig's and Hashimoto's deficiencies. Thus, these claims are patentable by virtue of their dependence on independent claim 1 as discussed above.

Conclusion

In view of the above amendments and remarks, Applicants believe that the pending application is in condition for allowance and it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

In the event a fee is required or if any additional fee during the prosecution of this application is not paid, the Patent Office is authorized to charge the underpayment to Deposit Account No. 50-2215.

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Respectfully submitted,

By Laura C. Brutman

Laura C. Brutman
Registration No.: 38,395
DICKSTEIN SHAPIRO LLP
1177 Avenue of the Americas
New York, New York 10036-2714
(212) 277-6500
Attorney for Applicant